Part 2: Decision Summary

1. SITE NAME, LOCATION, AND BRIEF DESCRIPTION

Comprising the Auxiliary Reactor Area (ARA) and the Power Burst Facility (PBF), Waste Area Group (WAG) 5 is in the south-central portion of the Idaho National Engineering and Environmental Laboratory (INEEL). The INEEL is located in southeastern Idaho and occupies 2,305 km^2 (890 mi^2) in the northeastern region of the Snake River Plain (see Figure 1). The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (40 USC 9601) identification number for the INEEL is 1000305. Land use at the INEEL is classified as industrial (DOE-ID 1996a).

The ARA consists of four separate operational areas designated as ARA-I, ARA-II, ARA-III, and ARA-IV. Once known as the Special Power Excursion Reactor Test (SPERT) facilities, PBF consists of five separate operational areas: the PBF Control Area, the PBF Reactor Area (SPERT-I), the Waste Engineering Development Facility (SPERT-II), the Waste Experimental Reduction Facility (WERF) (SPERT-III), and the Mixed Waste Storage Facility (SPERT-IV). Collectively, the WERF, Waste Engineering Development Facility, and the Mixed Waste Storage Facility are known as the Waste Reduction Operations Complex.

Fifty-five potential release sites have been identified at WAG 5: 25 at ARA and 30 at PBF. The sources of contamination at ARA include past discharges to underground storage tanks, septic systems, and several surface ponds. A low-level radioactive waste landfill and a large windblown contamination area associated with the cleanup of a 1961 reactor accident also are sources within ARA. The sources of contamination at PBF include past discharges to underground storage tanks, vadose zone injection wells, septic systems, and several surface ponds. Figure 2 illustrates the physical configuration of ARA and PBF.

The U.S. Department of Energy, Idaho Operations Office (DOE-ID), is the lead agency for the decisions presented in this Record of Decision (ROD). The U.S. Environmental Protection Agency (EPA) Region 10 approves of the decision and the Idaho Department of Health and Welfare (IDHW), Division of Environmental Quality, concurs. Both EPA and IDHW participated in the evaluation and selection of remedies for WAG 5

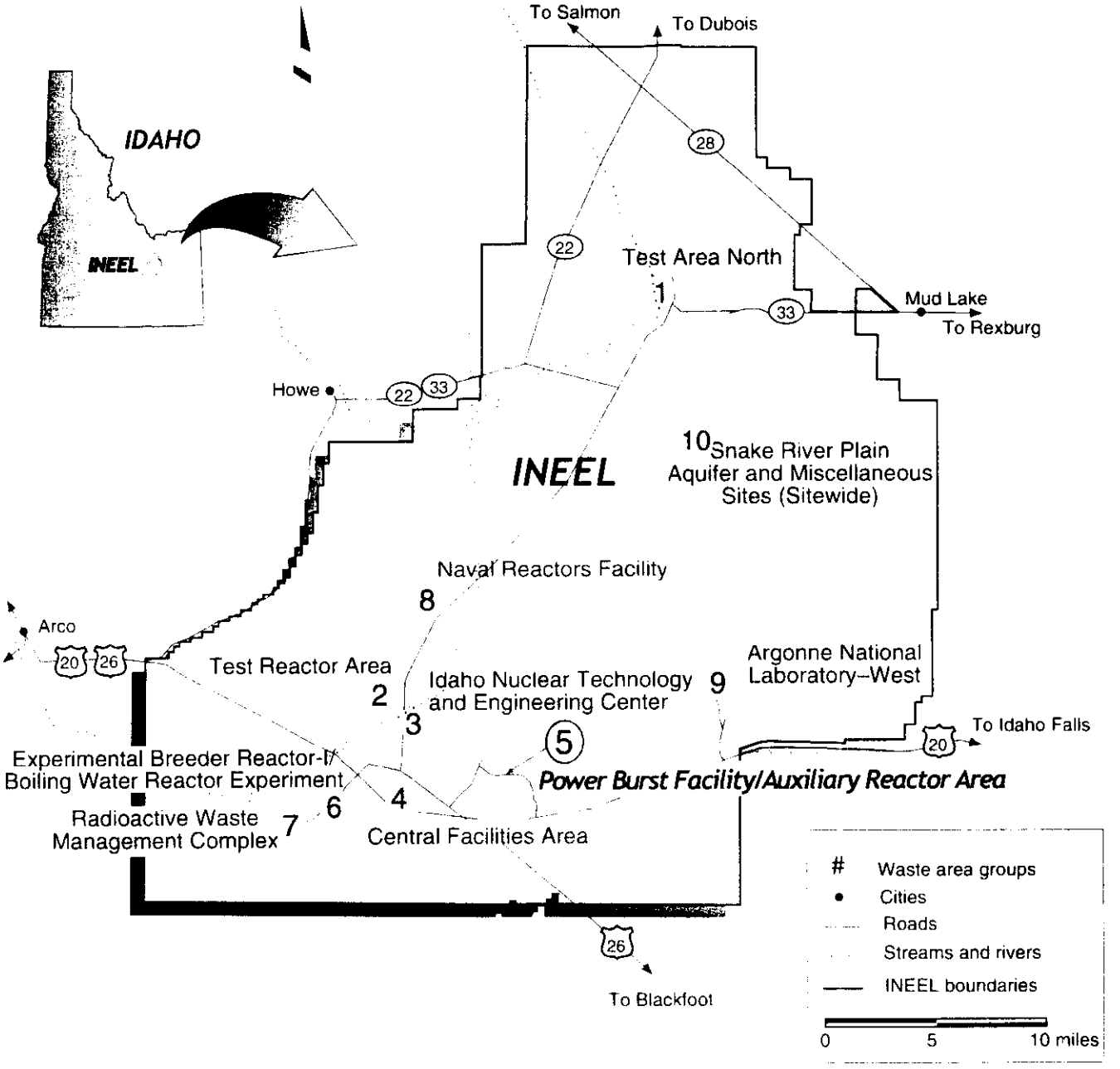

Figure 1. Location of WAG 5 at the Idaho National Engineering and Environmental Laboratory.

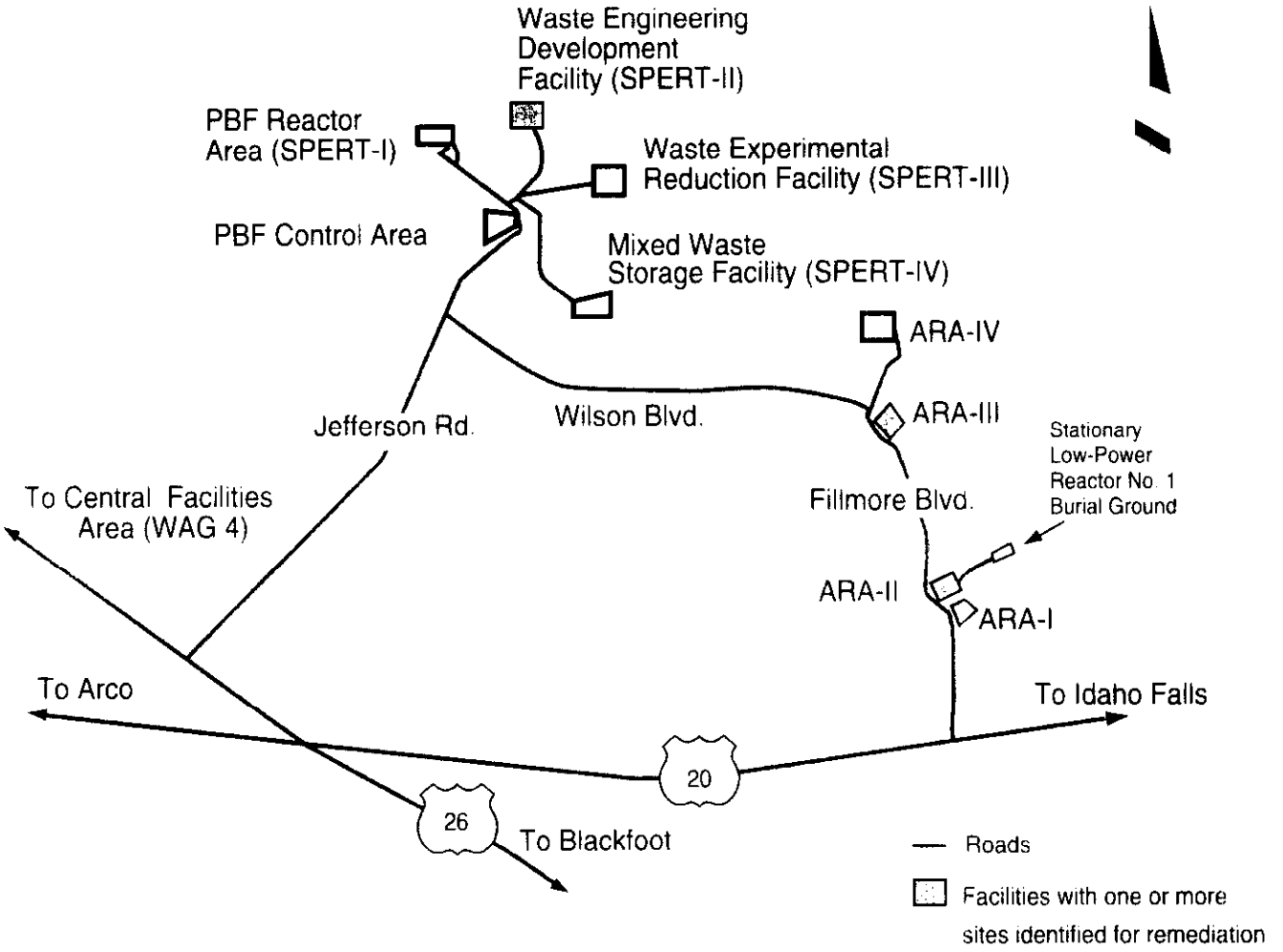

Figure 2. Physical configuration of WAG 5.

2. SITE HISTORY AND ENFORCEMENT ACTIVITIES

2.1 INEEL History

The INEEL, originally established in 1949 as the National Reactor Testing Station, is a U.S. Department of Energy (DOE)—managed reservation that historically has been devoted to energy research and related activities. The National Reactor Testing Station was redesignated as the Idaho National Engineering Laboratory in 1974 to reflect the broad scope of engineering activities that were being conducted at various laboratory facilities. In 1997, the Idaho National Engineering Laboratory was redesignated as the Idaho National Engineering and Environmental Laboratory in keeping with contemporary emphasis on environmental research.

Historically, facilities at the INEEL were dedicated to the development and testing of peaceful applications for nuclear power. Throughout the 50 years of INEEL operations, disposal practices have been implemented in compliance with state and federal regulations and policies established by DOE and its predecessors. Some of these practices are not acceptable by contemporary standards and have been discontinued. Contaminated structures and environmental media such as soil and water are the legacy of some historical disposals. Occasional accidental releases also have occurred over time. In keeping with the contemporary emphasis on environmental issues, INEEL research is now focused on environmental restoration to address these contaminated media and waste management issues to minimize additional contamination from current and future operations. Spent nuclear fuel management, hazardous and mixed waste management and minimization, cultural resources preservation, and environmental engineering, protection, and remediation are challenges addressed by current INEEL activities (DOE-ID 1996a).

2.2 Waste Area Group 5 History

As shown on Figure 2, ARA and PBF are located fairly close together. In addition to proximity, the two areas have similar operational backgrounds and sources of contamination. Therefore, ARA and PBF were consolidated into one waste area group for comprehensive evaluation (DOE-ID 1991). A synopsis of the history for each facility is given below.

2.2.1 Auxiliary Reactor Area

The ARA-I and ARA-II facilities were constructed in 1957. The ARA-I facility was built to support the Stationary Low-Power Reactor No. 1 (SL-1) located in the adjacent ARA-II facility and was the staging area for the emergency response to the 1961 SL-1 reactor accident and cleanup. The SL-1 reactor at ARA-II was operated intermittently from August 1958 until it was destroyed by a nuclear accident in January 1961 (Holdren, Filemyr, and Vetter 1995). Subsequent to decontamination following the SL-1 accident, activities at ARA-I included hot cell operations, materials research, and laboratory operations including sample preparation and inspection. The main buildings at ARA-II were converted to offices and welding shops. The ARA-II facility also housed numerous minor structures such as a guardhouse, a well house, a chlorination building, a decontamination and laydown building, a power extrapolation building, an electrical substation, and several storage tanks. The ARA-I and ARA-II facilities were formally shut down in 1988 and 1986, respectively. Decontamination and complete dismantlement were initiated in 1995 and are nearing completion.

Construction of the ARA-III facility was completed about 1959 to house the Army Gas Cooled Reactor Experiment research reactor. Experiments with the reactor continued until the plant was deactivated in 1961. In 1963, the ARA-III facility was modified to support the Mobile Low Power Reactor series of tests conducted at ARA-IV and remained active until late 1965 when the Army Reactor

Program was phased out. In 1969, two buildings were constructed at ARA-III to provide additional laboratory and office space in support of other INEEL programs. The facility was shut down in 1989. Decontamination and complete dismantlement was initiated in 1990 and completed in 1999.

The ARA-IV facility was built to accommodate the Mobile Low Power Reactor 1, an active project from 1957 to 1964. The Nuclear Effects Reactor was operated at ARA-IV from 1967 to 1970. The area was closed down until 1975, at which time it was used temporarily for some welding qualification work. Decontamination and dismantlement were performed in 1984 and 1985. Since 1985, the area has been used occasionally for testing explosives in powdered-metal manufacture experiments. A small control building, a bunker, the buried remains of two leach pits, and a sanitary waste system are all that remain.

2.2.2 Power Burst Facility

The PBF Control Area was originally built in the late 1950s for remote control of the SPERT experiments. As shown in Figure 2, the PBF Control Area is centrally located relative to the four SPERT facilities that surround it. The facility was greatly expanded for the PBF program, but its primary function as a support facility has not changed. The facility provides raw water storage and distribution, administrative offices, instrument and mechanical work areas, and data acquisition resources.

The SPERT-I reactor was operated from 1955 to 1964, and was decommissioned in 1964 and demolished in 1985. Remnants of the original SPERT-I facility, which consist of a small terminal building, a small instrument cell, some decomposing pavement, an abandoned seepage pit, and an old leach pond, remain in the vicinity. The PBF Reactor was constructed in 1972 just north of the remains of the SPERT-I facility. The PBF Reactor has been on standby since 1985. Other structures include a maintenance and storage building, cooling towers, two electrical substations, and numerous smaller buildings and structures.

The Waste Engineering Development Facility, originally built to contain the SPERT-II reactor, was constructed in the late 1950s. The SPERT-II reactor was operational from 1960 to 1964. After the reactor was removed, the facility was converted for research purposes. Current activities include waste treatment development and laboratory operations. A guardhouse is the only other building at the facility. An electrical substation, a leaching pond, a seepage pit, and a couple of underground tanks are the only other structures. The area also is used for temporary storage of uncontaminated lead. The lead is stored outside in cargo containers stacked on asphalt pads.

The WERF building, originally constructed to contain the SPERT-III reactor, was constructed in the late 1950s. The SPERT-III reactor was operational from 1958 to 1968. The reactor building was decontaminated in 1980, and the building was modified to contain the WERF, which began operation in 1982. Operations at WERF involve volume reduction of low-level radioactive waste. In addition to the WERF building, the facility contains a metal processing facility, a waste storage and handling building, an electrical substation, two exhaust stacks, and underground tanks.

The Mixed Waste Storage Facility originally housed the SPERT-IV reactor, which was operational from 1961 to 1970. After the reactor was removed, the building was modified slightly and converted to a waste storage facility. Mixed low-level waste, including radioactively contaminated polychlorinated biphenyl (PCB) waste, is stored in the former reactor pit. The facility also contains an electrical substation, a leach pond, and underground tanks.

2.3 Enforcement Activities

In January 1986, hazardous waste disposal sites within the INEEL that could pose an unacceptable risk to human health and safety or the environment were identified (EG&G 1986). The sites were ranked using either the EPA hazard ranking system for sites with chemical contamination or the DOE modified hazard ranking system for sites with radiological contamination. Based on the results of the hazard ranking, DOE-ID entered into a Consent Order and Compliance Agreement with Region 10 of the EPA and the U.S. Geological Survey on July 28, 1986 (DOE-ID 1986). The agreement called for implementing an action plan to remediate active and inactive waste disposal sites at the INEEL under the authority of the Resource Conservation and Recovery Act (RCRA) (42 USC 6901 et seq.), which regulates the generation, transportation, treatment, storage, and disposal of hazardous waste. A hazard ranking score of 28.5 or higher qualifies a site for the National Priorities List (54 FR 48184) as amended by CERCLA (42 USC 9601 et seq.). Because several sites within the INEEL received scores in excess of 28.5, the INEEL in its entirety became a candidate for the National Priorities List.

On November 15, 1989, the EPA added the INEEL to the National Priorities List under CERCLA (42 USC 9601 et seq.). The Federal Facility Agreement and Consent Order and Action Plan (FFA/CO) (DOE-ID 1991) were negotiated and signed by DOE-ID, EPA, and the IDHW in December 1991 to implement the remediation of the INEEL under CERCLA. Effective December 9, 1991, the FFA/CO superseded parts of the Consent Order and Compliance Agreement.

The Secretary of Energy's policy statement (DOE 1994) on the National Environmental Policy Act (NEPA) (42 USC 4321 et seq.) stipulates that DOE will rely on the CERCLA process for review of actions to be taken under CERCLA. The policy statement also requires that DOE address NEPA values by incorporating such values, to the extent practicable, in documents and public involvement activities generated under CERCLA.

In the Action Plan of the FFA/CO (DOE-ID 1991), potential source areas (sites) within each WAG were assigned to an operable unit (OU) for investigation or remedial activities. The assignments were designed to match the rigor of the assessment process with the complexity of each site and to allow for flexibility in determining appropriate further action as each assessment or action was completed. Waste Area Group 5 was subdivided into 13 OUs, originally containing a total of 48 individual sites. Subsequent to the publication of the FFA/CO, six additional sites were formally assigned to OUs within WAG 5. During the development of the WAG 5 remedial investigation/feasibility study (RI/FS), one more potential site was identified. In total, 55 sites are incorporated in OU 5-12, the Comprehensive RI/FS for WAG 5.

The comprehensive investigation is the final action for WAG 5 identified in the FFA/CO. Several actions have already been implemented under environmental authorities at WAG 5. The actions conducted under the authority of CERCLA, RCRA, and a State of Idaho investigation are summarized below. Cleanup actions conducted under the authority of DOE management also are listed.

2.3.1 CERCLA Authority

Three records of decision and two time critical removal actions have been completed for WAG 5 under CERCLA. The Record of Decision for Operable Units 5-05 and 6-01 (DOE-ID 1996b) addressed the ARA-06 SL-1 Burial Ground. The remedial action prescribed by the ROD consisted of consolidating the contaminated soil over the pits and trench and capping the low-level waste landfill with an engineered barrier. The selected remedy was implemented in 1996.

The Record of Decision for Operable Unit 5-13 (DOE-ID 1992b) addressed two sites: the PBF-08 Corrosive Waste Sump and the PBF-10 Evaporation Pond. The interim action prescribed by the ROD included removing the PBF-08 Corrosive Waste Sump contents, transporting the contents to the Mixed Waste Storage Facility for storage, and decontaminating the sump. The piping from the sump to the evaporation pond was removed, and effluent from the sump was rerouted to a new disposal tank. The interim action prescribed by the ROD for the PBF-10 Evaporation Pond included excavating sediments from the pond in areas with high chromium concentrations. Later the pond liner was removed and disposed of, the berm was pushed into the pond, and the area was graded and seeded with grasses. Remediation was completed in 1994.

The Record of Decision for Operable Unit 5-10 (DOE-ID 1992a) addressed the ARA-01 Chemical Evaporation Pond at ARA-I. No action with further evaluation of groundwater pathways in another operable unit was documented in the ROD. The groundwater pathway evaluation was included in the WAG 5 Comprehensive RI/FS (Holdren et al. 1999).

A time-critical removal action was implemented at the ARA-02 Sanitary Waste System (Dietz 1998). Liquid levels inside the system's three tanks were observed and found to vary over time, which indicated possible leakage to the soil below. In September 1996, the contents of all three septic tanks were removed and placed in drums in an approved temporary accumulation area to await final disposition.

A time-critical removal action was recommended for the PBF-26 site because of a historical single high detection of Aroclor-1254. Before the removal action, field immunoassay kits for PCBs were used to define the area of contamination. However, because the analytical results for PCB were below the field-screening level, the planned removal action was not performed and further evaluation of the site was not required (Hiaring 1998).

2.3.2 Inspector General Authority Action

The ARA-14 Septic Tank and Drain Field at ARA-III was removed by the decontamination and dismantlement (D&D) program at the INEEL in 1996, and the waste is currently in a temporary accumulation area at the ARA-III facility under the control of the DOE Inspector General (Falconer 1997).

2.3.3 Other Programmatic Activities

Cleanup activities have been conducted under several other programs at WAG 5. The achievements of the D&D program, the underground tank management program, and other DOE activities are summarized below.

2.3.3.1 Decontamination and Dismantlement. Over time, the D&D program has conducted numerous cleanup activities within WAG 5, and activities are currently ongoing at ARA. In addition to the complete demolition of the ARA-I, -II, and -III facilities, the following sites have been specifically addressed by the D&D program:

- ARA-03, ARA-I Lead Sheeting Pad: Soil was removed as part of the D&D of ARA-I and disposed of at the Radioactive Waste Management Complex (RWMC).
- ARA-09, ARA-II Septic Tank: The septic tank and sludge were removed during 1994 D&D activities at ARA-II.

- ARA-10, ARA-II Septic Tank East: The septic tank and sludge were removed during 1994 D&D activities at ARA-II.

- ARA-11, ARA-II Septic Tank West: The septic tank was removed during 1995 D&D activities at ARA-II.

- ARA-15, ARA-III Radionuclide Tank: The septic tank was removed during 1993 D&D activities at ARA-III.

- ARA-18, ARA-III Radionuclide Tank: As part of the D&D of ARA-III, all three tanks and the associated piping were examined and removed in 1993 and the earthen berm was leveled.

- ARA-19, ARA-II Detention Tank for Fuel Oil/Radionuclides: The underground radionuclide detention tank and piping were removed during 1995 D&D activities at ARA-III.

- ARA-20, ARA-IV Test Area Leach Pit No. 2: The pit structure, with the exception of the base ring located 5.5 m (18 ft) below the surface, was removed in 1983 when the ARA-IV facility underwent D&D.

- ARA-21, ARA-IV Test Area Septic Tank and Leach Pit No. 2: During D&D operations in 1987, all pipes to the system were removed and the septic tank and leach pit were covered with 1.4 m (4.5 ft) of soil.

- PBF-12, SPERT-I Leach Pond: In 1984, D&D were performed at the site. Remediation included removing the drain line and the top 0.8 m (2.5 ft) of contaminated soil, and mounding the area slightly with a 2.4-m (8-ft) cover of clean soil seeded with grass.

- PBF-20, SPERT-III Small Leach Pond: The pond area was sampled and backfilled by the D&D program in 1982.

- PBF-21, SPERT-III Large Leach Pond: The pond was sampled, partially excavated, and backfilled by the D&D program in 1983.

2.3.3.2 Underground Storage Tank Program Action Authority. Several underground storage tanks within WAG 5 have been abandoned in place, removed, or replaced with tanks with double containment. The following WAG 5 sites are tank sites where one of these actions has been implemented:

- PBF-04, PBF Control Area Oil Tank: Excavated and removed in 1990, the tank at the PBF-04 site was found in very poor condition with observable rust and pinholes. Because of safety issues related to the proximity of the substation and grounding grid, only 9 m^3 (12 yd^3) of contaminated soil were removed.

- PBF-14, SPERT-II Inactive Fuel Oil Tank: The tank at the PBF-14 site was filled with sand and abandoned in place, and the fuel line was disconnected.

- PBF-19, SPERT-III Inactive Fuel Oil Tank: The tank and contaminated soil associated with the tank at the PBF-19 site were removed.

- PBF-29, PBF Reactor Area Abandoned Fuel Oil Tank: The tank at the PBF-29 site was removed in 1996.

- PBF-31, SPERT-II Fuel Oil Tank: The tank at the PBF-31 site was removed and replaced in 1994.

- PBF-32, PBF Control Area Fuel Oil Tank: The tank at the PBF-32 site was removed and replaced in 1994.

2.3.3.3 Department of Energy Management Authority. Two additional actions have been completed as best-management practice by the INEEL management and operations contractor under the authority of DOE-ID:

- PBF-13, PBF Reactor Area Rubble Pit: All visible materials containing asbestos were removed in 1993 from PBF-13, the PBF Reactor Rubble Pit, and the pit was backfilled with clean soil and basalt rubble. Some buried asbestos may remain.

- PBF-22, SPERT-IV Leach Pond: In 1985, the PBF-22 site was surveyed and contaminated soil was removed and transported to the RWMC for disposal.

3. COMMUNITY PARTICIPATION

In accordance with CERCLA § 113(k)(2)(B)(i-v) and § 117 and the INEEL Community Relations Plan (DOE-ID 1995), opportunities for the public to obtain information and participate in the remedial investigation and decision process for WAG 5 were provided from May 1997 through June 1999. The documents providing information and opportunities to provide input included a "kick-off" fact sheet, which briefly discussed the status of the RI/FS (DOE-ID 1997b); various *INEEL Reporter* newsletter articles (a publication of the INEEL Environmental Restoration Program); three supplemental updates to the *INEEL Reporter* (LMITCO 1999, 1998, 1997); one "update" fact sheet (DOE-ID 1999c); a Proposed Plan (DOE-ID 1999b); briefings and presentations to interested groups; interviews; and public meetings.

In May 1997, a "kickoff fact sheet" (DOE-ID 1997b) about the WAG 5 RI/FS was mailed to about 500 members of the general public and more than 200 INEEL employees. Included in the fact sheet was a postage-paid return mailer comment form. No comments were received. This fact sheet also offered technical briefings to those interested in the WAG 5 comprehensive investigation. It was the initial opportunity for the public to be involved in how the investigation would be conducted. No one requested a briefing at the time, but briefings were conducted later in the investigation process.

In addition, an "update fact sheet" (DOE-ID 1999c) was mailed to approximately 700 citizens in January 1999. The purpose of the document was to keep citizens apprised of developments during the RI/FS, to include a schedule of the investigation, and to announce the approximate dates of public meetings. This fact sheet also offered technical briefings to those interested in the WAG 5 investigation.

Regular reports about the status of the project were included in bimonthly issues of the *INEEL Reporter* and were mailed to those on a document mailing list maintained by the Community Relations Program. Reports also appeared in three supplements to the *INEEL Reporter* in 1999, 1998, and 1997 (LMITCO 1999, 1998, 1997).

Several briefings on the WAG 5 investigation were given by DOE-ID to the INEEL Citizens Advisory Board and its Environmental Restoration Program Subcommittee. The advisory board is a group of 15 people representing the citizens of Idaho, who make recommendations to DOE-ID, EPA, and the State of Idaho about environmental restoration activities at the INEEL. The subcommittee reviewed a draft proposed plan, and the majority of its comments were incorporated into the final Proposed Plan (DOE-ID 1999b), which was distributed to the public in May 1999. In addition, recommendations from a citizens' focus group on two previous INEEL proposed plans also were incorporated into the final WAG 5 Proposed Plan. On May 19, 1999, the INEEL Citizens Advisory Board met again to finalize and submit its formal recommendations on the draft proposed plan to DOE-ID.

Also in 1999, briefings were held with members of an Idaho-based environmental organization, an organization consisting largely of retired INEEL employees, the Shoshone-Bannock tribes, several Idaho radio stations, several Idaho newspapers, national publications, and four Idaho television stations. Previously in 1998, members of the Shoshone-Bannock tribes toured areas of WAG 5.

Personal calls were made to stakeholders in the Pocatello, Boise, and Moscow areas the week of May 3, 1999, to inform individuals about the upcoming public meetings and to determine whether briefings were desired. As a result, technical briefings were held with a member of an environmental organization, an organization of retired INEEL employees on May 14, 1999, and members of the Shoshone-Bannock Tribes on May 17, 1999.

During the week of May 3, 1999, DOE-ID issued a news release to more than 100 media contacts about the 30-day public comment period for the WAG 5 Proposed Plan. This period began

May 10, 1999, and ended June 9, 1999. The issuance of the news release led to the publication of a short note in the community calendar sections of newspapers and in public service announcements on radio stations. The news release provided notice to the public that supportive WAG 5 investigation documents were available in the Administrative Record section of the INEEL information repositories located in the INEEL Technical Library in Idaho Falls, the Albertson Library on the campus of Boise State University, and the University of Idaho Library in Moscow. On May 10, a revised news release was sent to media contacts, correcting a typographical error about the date of the Boise public meeting. Display advertisements announcing the availability of the Proposed Plan and the locations of public meetings appeared in six Idaho newspapers during the week of May 3, 1999, in Idaho Falls, Boise, Lewiston, Fort Hall, Pocatello, and Twin Falls. Large display advertisements appeared in the following newspapers: the Idaho Falls *Post Register*, the Fort Hall *Sho-Ban News*, the Pocatello *Idaho State Journal*, the Twin Falls *Times News*, the Boise *Idaho Statesman*, and the Lewiston *Lewiston Morning Tribune*. On May 12, a corrected display advertisement ran in the *Idaho Statesman*. A followup advertisement ran in newspapers approximately 2 days before the public meetings in Idaho Falls, Boise, and Lewiston. To encourage attendance at the Lewiston meeting, an RSVP card was mailed to more than 200 citizens who reside in northern Idaho between the cities of Riggins and Sandpoint. No response was received based on the mailing. In addition, a post card was mailed to about 6,200 citizens informing them of the availability of the Proposed Plan, comment period, and upcoming public meetings. Also, an electronic note was sent to all INEEL employees informing them of the same.

Copies of the Proposed Plan (DOE-ID 1999b) were mailed to about 700 members of the public the week of May 3, 1999, urging citizens to comment on the Proposed Plan and to attend the public meetings. Public meetings were held in Idaho Falls on May 17, Boise on May 18, and Lewiston on May 19, 1999. Before the public meetings in each location, an availability session took place from 6 to 7 p.m. to allow for informal discussion of the issues. The public meetings began at 7 p.m.

For the general public, the activities associated with participating in the decision-making process included receiving the Proposed Plan, attending the availability sessions before the public meetings to informally discuss the issues, and submitting verbal and written comments to DOE-ID, EPA, and IDHW—during the 30-day public comment period.

Written comment forms available at the meeting locations (including a postage-paid business-reply form) were available to those attending the public meetings. The forms were used to submit written comments either at the meeting or by mail. The reverse side of the meeting agenda contained a form for the public to use in evaluating the effectiveness of the meetings. A court reporter was present at each meeting to keep transcripts of discussions and public comments. The meeting transcripts were placed in three INEEL information repositories in the Administrative Record section for the WAG 5 Comprehensive RI/FS. For those who could not attend the public meetings but wanted to make formal written comments, a postage-paid written comment form was attached to the WAG5 Proposed Plan.

A total of about 30 people not associated with the project attended the public meetings. Overall, seven citizens provided formal comments: five citizens provided oral comments and three provided written comments (one person provided both oral and written comments). All comments received on the Proposed Plan were considered during the development of this ROD. The decision for this action is based on the information in the Administrative Record for WAG 5.

A Responsiveness Summary has been prepared as part of the ROD. All formal oral comments presented at the public meetings and all written comments are included in Part 3 and in the Administrative Record for WAG 5.